7.62×39mm

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The **7.62×39mm** round is a rifle cartridge of Soviet origin that was designed during World War II. It was first used in the RPD machine gun. Due to the worldwide proliferation of the SKS and AK-47 pattern rifles, the cartridge is utilized by both militaries and civilians alike. 7.62×39mm ammunition is purportedly tested to function well in temperatures ranging from −50 °C (−58 °F) to 50 °C (122 °F) cementing its usefulness in extremely cold polar or hot desert conditions.

The 7.62×39mm cartridge was likely influenced by a variety of foreign developments, especially the pre-war German GeCo, 7.75×39mm experimental round,[4] and its developments in the German late-war Intermediate cartridge trials in calibers 7.9mm and 7.62mm. The German adopted 7.92×33mm Kurz by Polte did not influence development.

Shortly after the war, the world's most recognized military pattern rifle was designed for this cartridge: the AK-47. The cartridge remained the Soviet standard until the 1970s, and is still one of the most common intermediate rifle cartridges used around the world. It was replaced in Russian service by the 5.45×39mm cartridge, which is used by the current issue AK-74 and variants.

Contents

- 1 History
  - 1.1 M43
  - 1.2 M67
  - 1.3 Commercial ammunition
  - 1.4 Chinese steel core
- 2 Cartridge dimensions
- 3 Basic specifications of 21st century Russian service loads
- 4 Hunting and sport use
- 5 Gallery
- 6 See also
- 7 References
- 8 External links

History

7.62×39mm

Lateral view of a steel-cased 7.62×39mm FMJ cartridge.

Type	Rifle
Place of origin	Soviet Union
Service history	
In service	1944–present
Used by	Soviet Union, former Warsaw Pact, People's Republic of China, Cambodia, North Korea, Vietnam, Finland, Venezuela, many others
Production history	
Designed	1943
Produced	1943–present
Specifications	
Case type	Rimless, bottleneck
Bullet diameter	7.92 mm (0.312 in)
Neck diameter	8.60 mm (0.339 in)
Shoulder diameter	10.07 mm (0.396 in)
Base diameter	11.35 mm (0.447 in)
Rim diameter	11.35 mm (0.447 in)
Rim thickness	1.50 mm (0.059 in)
Case length	38.70 mm (1.524 in)
Overall length	56.00 mm (2.205 in)

M43

The original Soviet M43 bullets are 123 grain boat-tail bullets with a copper-plated steel jacket, a large steel core, and some lead between the core and the jacket. The cartridge itself consisted of a Berdan-primed, highly tapered (usually steel) case which seats the bullet and contains the powder charge. The taper makes it very easy to feed and extract the round, since there is little contact with the chamber walls until the round is fully seated. This taper is what causes the AK-47 to have distinctively curved magazines (helping to distinguish AK-47s from AK-74s, which feed from a much straighter magazine). While the bullet design has gone through a few redesigns, the cartridge itself remains largely unchanged.

Although the new cartridge represented a great leap forward from previous designs, the initial bullet design was flawed. The complete solidity of the M43 projectile causes its only drawback—it is very stable, even while traversing tissue. It begins to yaw only after traversing nearly 26 cm (10 in) of tissue.[5] This greatly reduces the wounding effectiveness of the projectile against humans. These wounds were comparable to that of a small handgun round using non-expanding bullets. Unless the round struck something vital, the wound was usually non-fatal, small and quick to heal.

Case capacity	2.31 cm^3 (35.6 gr H_2O)
Rifling twist	240 mm (1 in 9.45 in)
Primer type	Boxer Large Rifle
Maximum pressure	355.00 MPa (51,488 psi)
Filling	SSNF 50 powder
Filling weight	18.21 gr

Ballistic performance

Bullet weight/type	Velocity	Energy
123 gr (8 g) Full metal jacket	731.5 m/s (2,400 ft/s)	2,073.6 J (1,529.4 ft·lbf)
154 gr (10 g) Spitzer SP	641.3 m/s (2,104 ft/s)	2,056.3 J (1,516.6 ft·lbf)
123.5 gr (8 g) Full metal jacket	804.7 m/s (2,640 ft/s)	2,460 J (1,810 ft·lbf)
123 gr (8 g) Full metal jacket	738 m/s (2,420 ft/s)	2,179 J (1,607 ft·lbf)

Test barrel length: 415 mm

Source(s): Wolf Ammo[1] *Omar* [2] *Sellier & Bellot* [3]

Oblique view of a steel-cased 7.62×39mm FMJ cartridge.

M67

In the 1960s Yugoslavia experimented with new bullet designs to produce a round with a superior wounding profile, speed, and accuracy to the M43. The M67 projectile is shorter and flatter-based than the M43. This is mainly due to the deletion of the mild steel insert. This has the side effect of shifting the center of gravity rearward in comparison to the M43. This allows the projectile to destabilize nearly 17 cm (6.7 in) earlier in tissue.[5] This causes a pair of large stretch cavities at a depth likely to cause effective wound trauma. When the temporary stretch cavity intersects with the skin at the exit area, a larger exit wound will result, which takes longer to heal. Additionally, when the stretch cavity intersects a stiff organ like the liver, it will cause damage to that organ. However, the wounding potential of M67 is mostly limited to the small permanent wound channel the bullet itself makes, especially when the bullet yaws (tumbles).[5]

7.62×39 shown along side other

Commercial ammunition

Commercial Russian-made 7.62×39mm ammunition, such as those sold under the Wolf Ammunition brand name, are also available in Full Metal

Jacket (FMJ), Soft Points (SP) and Hollow Points (HP).[6] The Soft Points (SP) and Hollow Points (HP) offering hunters improved accuracy and expansion.[7]

Chinese steel core

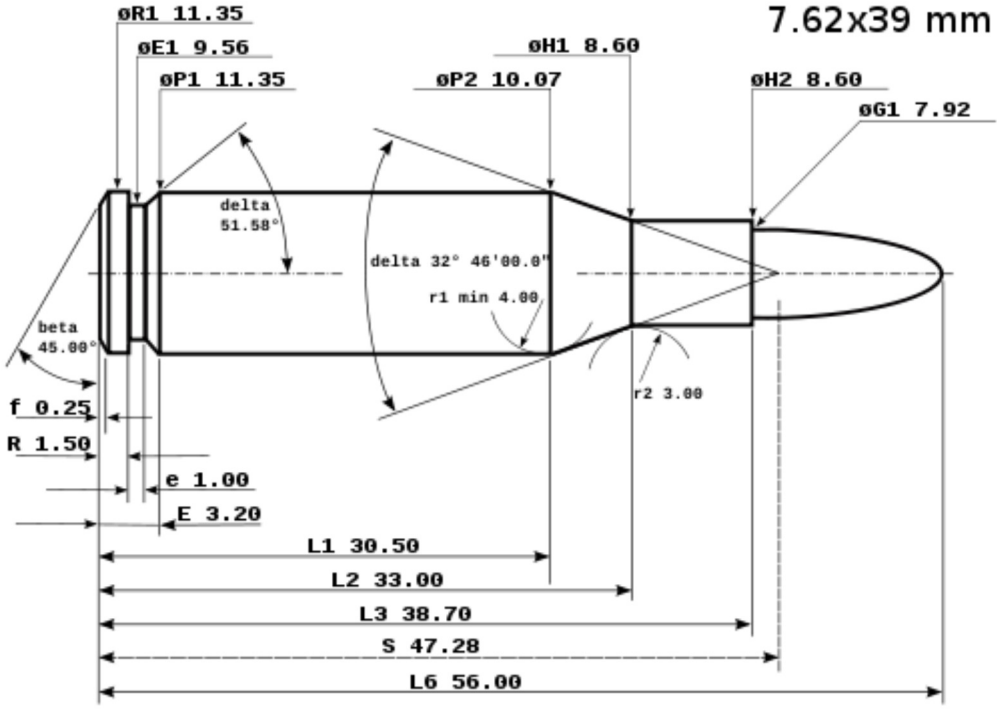
Chinese military-issue ammunition in this caliber is M43 style with a mild steel core and a thin jacket of copper or brass. Chinese ammunition (as well as all other M43 ammunition) is currently banned from importation in the U.S. U.S. federal law classifies the round as an armor-piercing handgun round. This classification is based on materials and bullet design rather than on empirical ability to penetrate armor.[8]

Cartridge dimensions

The 7.62×39mm has 2.31 ml (35.6 grains H_2O) cartridge case capacity.

cartridges

From left to right: 7.62×54mmR, 7.62×39mm and 7.62×25mm Tokarev.



7.62×39mm maximum C.I.P. cartridge dimensions. All sizes in millimeters (mm).[9]

Americans would define the shoulder angle at alpha/2 ≈ 16.4 degrees. The common rifling twist rate for this cartridge is 240 mm (1 in 9.45 in), 4 grooves, Ø lands = 7.62 millimetres (0.300 in), Ø grooves = 7.92 millimetres (0.312 in), land width = 3.81 millimetres (0.150 in) and the primer type is small rifle. According to an American source some barrels can however have a non C.I.P. conform grooves diameter of 7.82 millimetres (0.308 in).[10]

According to the official C.I.P. (Commission Internationale Permanente pour l'Epreuve des Armes à Feu Portatives) guidelines, the 7.62×39mm case can handle up to 355 MPa (51,488 psi) piezo pressure. In C.I.P. regulated countries every rifle cartridge combo has to be proofed at 125% of this maximum C.I.P. pressure to certify for sale to consumers.

Basic specifications of 21st century Russian service loads

The 7.62x39mm rounds in use with the Armed Forces of the Russian Federation are designed for AKM assault rifles and AK platform derived light machine guns. As per 2003 there were several variants of 7.62x39mm produced for various purposes. All use clad metal as case material.

The **57-N-231** conventional steel-core bullet is designed to engage personnel and weapon systems. The bullet has a steel core. The tip has no distinguishing colour. It can penetrate a 6 mm (0.2 in) thick St3 steel plate at 300 m (328 yd) and 6Zh85T body armour at 30 m (33 yd).

The **57-N-231P** is a tracer round designed for fire adjustment and target designation. The bullet has a green tip and the tracer burns for 800 m (875 yd). The **57-T-231PM1** is an improved tracer round which initiates at at 50 m (55 yd) from the muzzle and burns for 850 m (930 yd).

Cartridge designation[11][12]	**57-N-231**	**57-N-231P (tracer)**	**57-T-231PM1 (tracer)**
Cartridge weight	16.3 g (252 gr)	16.1 g (248 gr)	16.05 g (248 gr)
Bullet weight	7.9 g (121.9 gr)	7.57 g (116.8 gr)	7.55 g (116.5 gr)
Muzzle velocity	718 m/s (2,356 ft/s)	718 m/s (2,356 ft/s)	718 m/s (2,356 ft/s)
Muzzle energy	2,036 J (1,502 ft·lbf)	1,951 J (1,439 ft·lbf)	1,946 J (1,435 ft·lbf)
Accuracy of fire at 300 m (328 yd) (R_{50})	75 mm (3.0 in)	140 mm (5.5 in)	140 mm (5.5 in)

- R_{50} at 300 m (328 yd) means the closest 50 percent of the shot group will all be within a circle of the mentioned diameter at 300 m (328 yd).

Hunting and sport use

Since approximately 1990, the 7.62×39mm cartridge has seen some use in hunting arms in the US for hunting game up to the size of whitetail deer, as it is approximately as powerful as the .30-30 Winchester round, and has a similar ballistic profile.[13] Large numbers of inexpensive imported semiautomatic rifles, such as the SKS and AK-47 clones and variants, are available in this caliber.

In addition, several AR15 manufacturers, such as Colt, Olympic Arms, Del-Ton Inc and ModelOne Sales, are producing 16" carbines and 20" to 24" rifle length firearms that can often get very good accuracy to about 1" groups at 100 yards.

Ruger produces the Mini-30 as a 7.62×39mm version of their popular Mini-14 rifle. They also once had their M77 Mark II available in this caliber.

Remington Arms introduced its Compact Model 799 Mini Mauser bolt action rifle chambered in 7.62×39mm in 2006, describing the Mauser action as "sought after by today's hunters and shooters."[14] The Mauser action is a copy of the Gewehr 98 model rifle's action.

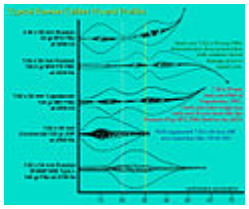
CZ-USA Sells the "micro length Mauser style" bolt action chambered in 7.62×39mm.[15]

Savage Arms has introduced (around 2010–2011) their own bolt action rifle in 7.62×39mm caliber - Model: 10 FCM Scout.[16]

Both the Sig 516 Russian and the Sig 556r are chambered in 7.62x39mm.

The low cost and high availability of military surplus ammunition makes this cartridge attractive for many civilian shooters.

Gallery



Wound Profiles of Russian small-arms ammunition compiled by Dr. Martin Fackler on behalf of the U.S. military.

7.62x39mm ammunition ans sbnap cap.

See also

- List of rifle cartridges
- 7.62 mm caliber
- .220 Russian

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9. ^ C.I.P. decisions, texts and tables free current C.I.P. CD-ROM version download (ZIP and RAR format) (http://www.cip-bp.org/index.php?id=tdcc-telechargement)
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11. ^ Russian 7.62x34mm Rounds for Rifles and Machine Guns, Land Forces Weapons Export Catalog, page 85 (http://www.military-today.com/russian_land_forces.pdf)
12. ^ 7.62 cartridges (http://warfare.be/db/linkid/2466/catid/339/)
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16. ^ "Savage 10 FCM Scout" (http://www.savagearms.com/firearms/model/10FCM+SCOUT)

External links

- Various photos of 7.62×39mm ammunition (http://www.conjay.com/Ammunition%20for%20Armor%20Testing%20East%207.62mm%20x%2039.htm)

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